NITROGEN

PHOSPHATE

POTASH

THE FERTILIZER SUPPLY 1976-77

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THE FERTILIZER SUPPLY 1976-77 1/

SUMMARY

Net domestic supplies of fertilizer plant nutrients in the 1976-77 fertilizer year are expected to total 21.8 million tons - nitrogen (N), phosphate (P_2O_5), and potash (K_2O). This is 5 percent more than last year's supply and 7 percent more than 2 years ago.

Estimated supplies of N total 10,870,000 tons, up 5 percent from last year and 15 percent more than 2 years ago. Curtailment of natural gas supplies for anhydrous ammonia plants may reduce production by about three-fourths of a million tons or about one-half million tons more than was lost last year. New plants starting up during the year are expected to produce about 700,000 tons of anhydrous ammonia, largely for fertilizer use, which will more than offset the loss from increased natural gas curtailments. Production of nitrogenous fertilizers for which anhydrous ammonia is the basic raw material is expected to increase over last year for all materials except solid ammonium nitrate and ammonium sulfate.

Phosphate supplies are expected to total 5,262,000 tons of P_2O_5, up 4 percent from a year ago but 7 percent less than 2 years ago. Movement of phosphatic materials during the spring season will determine production levels. Capacity for producing concentrated phosphatic materials is adequate. Detecting signals for production changes in time to avoid further imbalance in the market is the key.

Potash supplies are expected to total 5,703,000 tons of K_2O, 7 percent more than a year ago and 8 percent more than 2 years ago. Imports of potassium chloride, primarily from Canada, are expected to supply about 79 percent of this material. Supply from domestic production is expected to be up 9 percent from last year. Potassium sulfate supplies are expected to be up 7 percent from year-ago levels.

Beginning inventories on July 1, 1975 and 1976 were much larger than usual for most kinds of fertilizer. Thus, production rates are adjusted according to movement of materials and limits of storage capabilities. Sensitivity to both domestic and international market conditions is essential if industry instability is to be avoided.

1/ The fertilizer year is from July 1 through June 30.

NITROGEN (N)

Net domestic supplies of nitrogen (N) for fertilizer use are expected to total 10,870,000 tons in the 1976-77 fertilizer year. This is about 5 percent more than was available last year and 15 percent above 2 years ago (table 1). Supplies from domestic production are estimated to be up about 3 percent over last year, with imports up about 17 percent and exports down about 2 percent.

Natural gas curtailments - Anhydrous ammonia producers for the last few years have lost production because of natural gas curtailment. The severe winter of 1976-77 has caused deeper natural gas curtailments than encountered previously. The current estimate of lost production is 750,000 tons of anhydrous ammonia compared with a loss of 251,000 tons in 1975-76. However, new plants starting production are expected to produce 700,000 tons this fertilizer year. This more than offsets the increased loss from curtailments this year.

Supply from domestic production - Supplies of nitrogen (N) from domestic production are expected to total 10,662,000 tons (table 1). The supply of liquid nitrogen, estimated to be about two-thirds of the total domestic supply of N, is expected to be 7,041,000 tons, up 3 percent over last year. Anhydrous ammonia shipped as such for fertilizer use is expected to be up about 2 percent over last year and up over 16 percent from 2 years ago. Production of all other liquid nitrogen indicates an increase of about 6 percent.

Domestic production of solid nitrogen is estimated to total 3,621,000 tons in the current fertilizer year, up 1 percent over a year ago. Ammonium nitrate supplies are expected to be down about 9 percent from last year, ammonium sulfate down 5 percent, and solid urea for fertilizer use up about 2 percent. Other solid nitrogen-bearing materials, largely ammonium phosphates, are estimated to be up about 16 percent from last year.

Imports - Total nitrogen imports for the fertilizer year are estimated to be about 1,427,000 tons of N, 17 percent more than in 1975-76. This will again put the United States back into the position of being a net importer. Imports of anhydrous ammonia are estimated to be down 6 percent from last year but up 21 percent above 2 years ago. All other major imports are expected to be up over last year, with nitrogen solutions 54 percent, ammonia nitrate 19 percent, ammonium sulfate 35 percent, urea 83 percent, and sodium nitrate 64 percent above last year.

Exports - Nitrogen exports will total around 1,219,000 tons of N, about 2 percent less than last year. Anhydrous ammonia exports are expected to be up 30 percent from last year. Ammonium nitrate and

Table 1.--Nitrogen: Estimated supply of N for fertilizer purposes, United States, fertilizer years, 1974-75, 1975-76, and 1976-77

Item	1974-75 1/	1975-76 1/	1976-77	Percent change in 1976-77 from 1975-76	Percent change in 1976-77 from 1974-75
	1,000 Short tons	1,000 Short tons	1,000 Short tons	Percent	Percent
Supply from domestic production:					
Liquids:					
Ammonia (including aqua)	3,995	4,548	4,643	+ 2	+ 16
All other	2,177	2,256	2,398	+ 6	+ 10
Total liquids	6,172	6,804	7,041	+ 3	+ 14
Solids:					
Ammonium nitrate 2/ 3/	1,210	1,232	1,115	- 9	- 8
Ammonium sulfate 3/	504	512	487	- 5	- 3
Urea	568	868	883	+ 2	+ 55
All other solids 4/	889	981	1,136	+ 16	+ 28
Total solids	3,171	3,593	3,621	+ 1	+ 14
Total liquids and solids	9,343	10,397	10,662	+ 3	+ 14
Imports:					
Ammonia (including aqua)	491	630	592	- 6	+ 21
Nitrogen solutions	28	56	86	+ 54	+207
Ammonium nitrate	106	99	118	+ 19	+ 11
Ammonium sulfate	52	88	119	+ 35	+129
Urea 3/	291	189	346	+ 83	+ 19
Sodium nitrate	32	14	23	+ 64	- 28
All other	198	142	143	0	- 28
Total	1,198	1,218	1,427	+ 17	+ 19
Exports:					
Ammonia (including aqua)	293	265	345	+ 30	+ 18
Ammonia nitrate	7	21	2	- 95	- 71
Ammonium sulfate	120	158	104	- 34	- 13
Urea	207	267	206	- 23	0
All other	488	529	562	+ 6	+ 15
Total	1,115	1,240	1,219	- 2	+ 9
Net domestic supply	9,426	10,375	10,870	+ 5	+ 15

1/ Revised.
2/ Includes ammonium nitrate and ammonium nitrate-limestone mixtures.
3/ Adjusted for estimated quantity going into nonfertilizer uses.
4/ To avoid duplication, the figure for "all other solids" has been adjusted by the estimated amount of imported ammonia used in primary materials.

ammonium sulfate exports are expected to be down about 95 percent and 34 percent, respectively. Urea exports are also expected to be down about 23 percent, while all other materials are expected to be up 6 percent.

Nitrogen capacities - Domestic anhydrous ammonia capacity was estimated at 18.8 million tons of anhydrous ammonia (NH_3) on January 1, 1977, about the same as 1975. Some of the projects included in the previously announced 8-million-ton expansion of anhydrous ammonia capacity (from January 1, 1975 to January 1, 1979) have been cancelled, became questionable, or have been delayed. Currently, by including all recent announcements, the total expansions during this 4-year period is estimated to be about 6 million tons.

Urea capacity is estimated to be 6 million tons of material, about the same as a year ago. Ammonium nitrate capacity is estimated to be 9.2 million tons. About 1.2 million tons of ammonium nitrate is used to produce industrial material. The 8.0 million tons which is used for making fertilizer grade material is divided into about 61 percent solid and 39 percent liquid.

PHOSPHATE (P_2O_5)

Net domestic supplies of phosphate (P_2O_5) are expected to total 5,262,000 tons in the 1976-77 fertilizer year, about 4 percent more than was available last year and 7 percent less than 2 years ago (table 2). Imports are estimated to be 224,000 tons of P_2O_5, up 1 percent from 1975-76 but down 18 percent from 1974-75. Exports are expected to be 2,345,000 tons of P_2O_5, up 8 percent from a year ago and up 26 percent over 1974-75.

Normal superphosphate - Total supplies of normal and enriched superphosphate from domestic production are estimated to be 371,000 tons of P_2O_5, about 10 percent less than last year (table 2). Imports and exports will be negligible.

Concentrated superphosphate - Supplies of concentrated superphosphate from domestic production are expected to total 1,677,000 tons of P_2O_5, 3 percent more than last year. Imports are estimated to be up about 20 percent from last year. Exports are expected to be up about 4 percent.

Ammonium phosphate - Domestic supplies of ammonium phosphate are expected to total 3,587,000 tons of P_2O_5, 12 percent more than in 1975-76, and 39 percent more than 2 years ago. Imports are estimated to be up about 4 percent from last year, and exports up about 6 percent.

Table 2.--Phosphate: Estimated supply of P_2O_5 for fertilizer purposes, United States, fertilizer years, 1974-75, 1975-76, and 1976-77

Item	1974-75 1/	1975-76 1/	1976-77	Percent change in 1976-77 from 1975-76	Percent change in 1976-77 from 1974-75
	1,000 Short tons	1,000 Short tons	1,000 Short tons	Percent	Percent
Supply from domestic production:					
Normal and enriched superphosphate	612	414	371	- 10	- 39
Concentrated superphosphate	1,569	1,633	1,677	+ 3	+ 7
Ammonium phosphate 2/	2,572	3,212	3,587	+ 12	+ 39
All other 3/	2,477	1,755	1,748	0	- 29
Total	7,230	7,014	7,383	+ 5	+ 2
Imports:					
Concentrated superphosphate	26	15	18	+ 20	- 31
Ammonium phosphate	106	146	152	+ 4	+ 43
All other	142	60	54	- 10	- 62
Total	274	221	224	+ 1	- 18
Exports:					
Normal superphosphate	4	4	1	- 75	- 75
Concentrated superphosphate	509	563	585	+ 4	+ 15
Ammonium phosphate	1,002	1,216	1,292	+ 6	+ 29
All other	345	392	467	+ 19	+ 35
Total	1,860	2,176	2,345	+ 8	+ 26
Net domestic supply	5,644	5,060	5,262	+ 4	- 7

1/ Revised.
2/ Includes ammonium nitrate and ammonium nitrate-limestone mixtures.
3/ Adjusted for estimated quantity going into nonfertilizer uses.

Phosphoric acid - Wet-process phosphoric acid is the basic P_2O_5 material used in the manufacture of high-analysis phosphatic fertilizers. Production is up 4 percent over last year. The rate of use in concentrated phosphatic fertilizer materials and shipments to other fertilizer producers for further processing during the second half of the 1976-77 fertilizer year will determine changes in operating rate from that of the first half.

Supplies of phosphoric acid available for sale (estimated to be about 25 percent of production) to primary fertilizer producers without phosphoric acid facilities, and to secondary fertilizer producers, continues to be a major segment of the total P_2O_5 supply. Secondary manufacturers use phosphoric acid to produce solid mixtures, solid N-P base materials (including ammonium phosphate), liquid N-P base materials (including ammonium phosphate and ammonium polyphosphate), liquid mixed fertilizers, and for direct application.

Phosphate capacities - Normal superphosphate capacity in operating plants is estimated to be about 674,000 tons of P_2O_5. Concentrated superphosphate capacity is estimated to be 2.7 million tons of P_2O_5.

Ammonium phosphate capacity in plants operated by primary producers is estimated to be about 4.8 million tons of P_2O_5, about the same as last year. Available information is not sufficient to reliably estimate capacity of other plants operated by secondary producers which manufacture ammonium phosphate primarily for their own use in mixed fertilizers (solid and liquid) and liquid ammonium polyphosphate.

Wet-process phosphoric acid capacity in operating plants is estimated to be 8.9 million tons of P_2O_5, about the same as a year ago. Some of the new jumbo plants are not yet operating at rated capacity.

The above estimates of P_2O_5 capacities are based on current production of phosphatic materials. However, capacities may shift within limits from one material to another, since phosphoric acid is the basic P_2O_5 source for the production of all concentrated phosphatic materials except nitric phosphate.

Within limits, market conditions govern division of the output of phosphoric acid into concentrated superphosphate, various grades of ammonium phosphate, liquid base N-P materials, or sales of phosphoric acid to secondary fertilizer manufacturers.

POTASH (K_2O)

Net domestic supplies of potash (K_2O) in 1976-77 are expected to total 5,703,000 tons, 7 percent more than last year and 8 percent more than 2 years ago (table 3). Imports are expected to be 4,295,000 tons of K_2O, up 10 percent from 1975-76. Exports are expected to be 1,114,000 tons of K_2O, up 22 percent.

Potassium chloride - Supplies of domestically produced potassium chloride (muriate of potash) are expected to total 2,075,000 tons of K_2O, (table 3), about 10 percent more than last year and 12 percent more than 2 years ago. Imports are expected to be up about 10 percent, and exports up 28 percent. Subtracting exports from domestic production indicates that only 21 percent of the net domestic supply will be from domestic production. Practically all of the remaining 79 percent will be imported from Canada.

Potassium sulfate - Supplies of potassium sulfate and potassium magnesium sulfate from domestic production are expected to total 412,000 tons of K_2O in 1976-77, 7 percent more than last year and 3 percent more than 2 years ago. Imports are expected to be up about 41 percent and exports down about 3 percent.

Potash capacities - U.S. potash production capacity is estimated to be 3.0 million tons of K_2O as of January 1, 1977.

Canadian capacity is estimated to be about 8.3 million tons of K_2O. The Provincial Government of Saskatchewan has purchased two mines and facilities and is reported to be negotiating with other potash companies as a part of its plan to own and control 50 percent or more of the potash industry in the Province.

INVENTORIES

Inventories of nitrogen and phosphate materials are reported monthly by the Bureau of the Census. Inventories of each nitrogenous material are stocks held by producing companies at plants and other locations.

Phosphate material inventories are the stocks at producing locations only. Monthly potash inventories are not available from Government sources. Data are not available on inventories held by secondary manufacturers, distributors, and dealers.

Table 3.--Potash: Estimated supply of K_2O for fertilizer purposes, United States, fertilizer years, 1974-75, 1975-76, and 1976-77

Item	1974-75 1/	1975-76 1/	1976-77	Percent change in 1976-77 from	
				1975-76	1974-75
	1,000 Short tons	1,000 Short tons	1,000 Short tons	Percent	Percent
Supply from domestic production:					
Potassium chloride	1,853	1,893	2,075	+ 10	+ 12
Potassium sulfate 2/	399	385	412	+ 7	+ 3
All other	35	35	35	0	0
Total	2,287	2,313	2,522	+ 9	+ 10
Imports:					
Potassium chloride	3,785	3,849	4,226	+ 10	+ 12
Potassium sulfate 2/	25	32	45	+ 41	+ 80
All other	37	29	24	- 17	- 35
Total	3,847	3,910	4,295	+ 10	+ 12
Exports:					
Potassium chloride	619	725	927	+ 28	+ 50
Potassium sulfate 2/	175	166	161	- 3	- 8
All other	54	20	26	+ 30	- 52
Total	848	911	1,114	+ 22	+ 31
Net domestic supply	5,286	5,312	5,703	+ 7	+ 8

1/ Revised.
2/ Includes ammonium nitrate and ammonium nitrate-limestone mixtures.

Nitrogen - The inventory of anhydrous ammonia at the end of June 1976 was 1,427,269 tons, a new record for June (table 4). This was up over 26 percent from June 1975 and up 132 percent from 2 years ago. The inventory of anhydrous ammonia at the end of December 1976, the middle of the current fertilizer year, was 2,279,136 tons--up about 10 percent from December 1975, and up about 100 percent over 3 years ago.

Stocks of ammonium nitrate and nitrogen solutions in June 1976 were down from the record levels for this date in 1975.

Phosphate - The June 1976 wet-process phosphoric acid inventory was 39 percent below 1975 and 3 percent below 2 years ago (table 4).

June 1976 stocks of total phosphates were down 21 percent from the 1975 record level of 649,644 tons, but still 97 percent over 1974. June inventories of normal and concentrated superphosphates were down over 40 percent from the near record levels in 1975; however, the 1976 levels are still up 8 percent and 39 percent, respectively, from 2 years ago.

FOREIGN TRADE IN FERTILIZER

U.S. imports - Seventy-nine percent of total fertilizer imports come from Canada in 1975-76 (table 5). Over three-fourths of this was potassium chloride. U.S. companies, or their subsidiaries in Canada, and subsidiaries of Canadian companies in the United States, are responsible for a large share of the imports. Countries other than Canada are the major source for imported ammonium nitrate-limestone, nitrogen solution, anhydrous ammonia, calcium nitrate, potassium nitrate, potassium-sodium nitrate, potassium sulfate, and sodium nitrate. Mexico continues to be the major import source of phosphoric acid.

Imports of ammonium sulfate, anhydrous ammonia, nitrogen solutions, synthetic nitrogenous material not elsewhere classified, ammonia phosphate, potassium chloride, potassium-sodium nitrate, and potassium sulfate showed gains in 1975-76 over the previous year (table 6). Anhydrous ammonia imports have nearly doubled over the last 5 years. Imports of phosphoric acid decreased 53 percent from 1974-75, the first decline in imports of this material since 1972-73. In 1975-76, there was also a decrease in imports of ammonium nitrate, calcium cyanamide, calcium nitrate, ammonium nitrate-limestone, sodium nitrate, urea, phosphate crude, and mixed fertilizer from the previous year.

Table 4.--Inventories of selected fertilizer materials, United States, end of June, December, and February 1/

Material	Unit	Beginning inventory			Mid-fertilizer year inventory			Inventory build-up for spring season	
		For end of June			For end of December			For end of February	
		1974	1975	1976	1974	1975	1976	1975	1976
Anhydrous ammonia	Tons of material	615,376	1,131,500	1,427,269	1,138,280	2,061,804	2,279,136	1,555,315	2,544,598
Ammonium nitrate, solid	"	48,801	224,584	95,937	259,046	330,305	294,111	250,320	295,259
Ammonium sulfate	"	139,496	172,753		122,691	284,405	175,511	184,515	294,600
Ammonium sulfate, coke oven	"	14,000	67,000	39,000	23,000	113,000	50,000	27,000	95,000
Nitrogen solutions	Tons of N	79,836	225,166	121,694	323,411	449,623	453,937	315,241	580,643
Phosphoric acid wet-process	Tons of P_2O_5	118,195	188,335	114,177	166,042	163,515	126,739	153,654	185,985
Total phosphates	"	260,493	649,644	513,349	377,137	541,301	533,773	430,904	656,084
Normal & enriched superphosphates	"	53,927	100,648	58,047	78,310	76,934	71,975	99,607	66,593
Concentrated superphosphates	"	95,016	254,029	132,064	163,618	168,024	129,420	171,202	183,293
Ammonium phosphates	"	95,773	263,300	305,003	116,486	261,204	311,033	137,633	378,633
Other phosphates	"	15,777	31,667	18,236	18,723	35,139	21,345	22,799	35,166

1/ Current Industrial Reports, Inorganic Fertilizer Materials and Related Acids, M28B, Bureau of the Census.

Table 5.--U.S. imports of selected fertilizer materials by country of origin, fertilizer year 1975-76

Country of origin	Ammonium sulfate	Ammonium nitrate	Anhydrous ammonia	Urea	Calcium nitrate	Nitrogen solutions	Potassium chloride	Potassium sulfate	Potassium sodium nitrate	Mixed fertilizers
	Short tons of material									
Canada	197,344	234,467	131,790	233,580	100	62,538	6,265,765	4	170	99,802
Mexico			14,480							25
Panama	50									
Trinidad and Tobago	12,030		160,893	55,931						
Netherlands Antilles			93,765			6,008				
Colombia			21,954							
Venezuela			91,617	9,331						
Chile							9,704		21,780	
Sweden					39	11,641				
Norway	27,700		8,549	55,436	71,789				1,995	
Denmark			14,330							5,506
United Kingdom				6,426	20		29			16
Netherlands	83,013	58,482	47,857	137,074		107,614				
Belgium				4,965				8,267		
France			18,732					24,267		
West Germany	10,000			1	2	12	10,025	30,566		313
East Germany							21,660			
Austria			5,822	30						
USSR			17,800				16,151			
Spain							4,409			
Italy	12,186			272						
Romania		2,486								
Bulgaria							100			
Iran			59,073							
Israel							93,367		15,469	
Gaza Strip							2,868			
Kuwait			24,909							
Saudi Arabia				10,416						
Qatar				7,469						
Japan	78,002		47,715	6,671	3					42
Australia			7,475							
Congo							42,188			
Total	420,325	295,435	766,761	527,602	71,953	187,813	6,466,266	63,104	39,414	105,704

1/ Other materials imported were the following: 378 tons dried blood; 211 tons manures, including guano; 37,570 tons calcium cyanamide; 89,098 tons sodium nitrate; 5,649 tons bone ash, dust, meal; 30,405 tons potassium nitrate; 22,115 tons ammonium nitrate-limestone; 35,505 tons phosphate crude, NES; 128,936 tons nitrogenous fertilizer NSPF; 64,530 tons liquid phosphatic fertilizer; 35,960 tons solid phosphatic fertilizer NSPF; 3,057 tons potassic fertilizer NSPF; 339,669 tons ammonium phosphates; 60,121 tons fertilizer materials NSPF; and 1 ton basic slag.

Table 6.--U.S. imports of selected fertilizer materials, fertilizer years 1971-72 through 1975-76

Material	1971-72	1972-73	1973-74	1974-75	1975-76
	Short tons of material				
Ammonium nitrate	390,324	329,243	301,169	316,227	295,435
Ammonium nitrate-limestone	134	181	208,776	189,945	22,115
Ammonium sulfate	263,559	276,183	273,061	248,232	420,325
Anhydrous ammonia	392,975	343,087	437,639	598,292	766,761
Calcium cyanamide	3,356	3,761	3,299	58,550	37,570
Calcium nitrate	39,314	97,702	184,574	116,160	71,953
Nitrogen solutions	119,540	144,762	166,304	91,669	187,813
Sodium nitrate	159,500	74,558	99,863	201,520	89,098
Synthetic nitrogenous material,nec	35,438	20,743	212,821	109,327	128,936
Urea	365,218	671,714	668,316	811,842	527,602
Ammonium phosphate	488,865	433,737	396,757	247,017	339,669
Phosphate, crude	67,058	43,112	163,956	79,879	35,505
Phosphoric acid	90,662	89,490	106,432	138,051	64,530
Potassium chloride	5,082,282	5,250,338	6,766,582	6,358,650	6,466,266
Potassium-sodium nitrate	39,586	37,783	47,404	16,387	39,414
Potassium sulfate	48,042	54,456	73,911	50,556	63,104
Mixed fertilizers	188,473	198,311	232,105	290,949	105,704

U.S. exports - Phosphate rock exports dropped 12 percent in 1975-76, the second consecutive decline since 1969-70 (table 7). Canada and Japan took nearly 4.4 million tons, or 37 percent of the total. These two, with nine other countries took over 89 percent of the phosphate rock exports. In addition, United Kingdom, Italy, Romania, and India took from 182,000 to 269,000 tons of phosphate rock or 7.2 percent of the total.

Concentrated superphosphate and potassium chloride exports in 1975-76 were over 1 million tons and ammonium phosphate over 2 million tons. Ammonium sulfate exports at over 750,000 tons and urea at 580,000 tons were up 32 percent and 29 percent, respectively, the highest in 7 years for ammonium sulfate and 6 years for urea.

Anhydrous ammonia, synthetic nitrogenous material not elsewhere classified, phosphate rock, potassium sulfate and mixed fertilizer were the only materials exported which did not show gains in 1975-76 over the previous year (table 8). Anhydrous ammonia exports declined to a level 74 percent below the record export in 1968-69. Exports of ammonium phosphate have increased 140 percent since 1970-71.

About 18 percent of all plant nutrients exported in 1975-76 (excluding phosphate rock) went to countries with Agency for International Development (AID) agriculture programs compared to 24 percent in 1974-75 and 50 percent in 1972-73.

Over 64 percent of the other ammonia phosphate exported, 32 percent of the urea, 27 percent of the ammonium sulfate and mixed fertilizer, and 24 percent of the ammonium nitrate went to developing countries in which AID had active agricultural programs (table 7). AID financed fertilizer exports to only seven of these countries. However, AID did not necessarily finance all the fertilizer exported to these countries.

U.S. historical trade balance - The United States shifted from a net importer of nitrogen (N) to a net exporter in 1966 (table 9). The shift resulted primarily from the increased emphasis on the use of fertilizers in the AID program. A reduction in AID requirements in 1969-70 caused the first decline in N exports since 1962-63. The decline was reversed in 1972-73 by the worldwide food shortage and the need to increase food production. The United States became a net importer of N in 1974-75 due primarily to limited availability of foreign exchange for fertilizer purchases and world economic conditions. However, the United States shifted back to being a net exporter in 1975-76 but is expected to again be a net importer in 1976-77.

U.S. exports accounted for about 39 percent of processed fertilizer P_2O_5 in world trade in 1974-75. However, the United States phosphate rock exports dropped to its lowest level since 1969-70.

Table 7.--U.S. exports of selected fertilizer materials by country of destination, fertilizer year [illegible]. 1/

Country of destination	Ammonium sulfate	Ammonium nitrate	Anhydrous Ammonia		Urea	Phosphate rock (all)	Normal super-phosphate	Concentrated super-phosphate	Ammonium Phosphate		Phosphoric acid (P_2O_5) (fert. grade)	Potassium chloride	Mixed fertilizers
			Fertilizer grade	Industrial					Diammonium phosphate	Other ammonium phosphate			
	Short tons of material												
Canada	29,579	3,820	76,408	1,224	20,105	2,936,978	10,166	52,828	111,689	27,711	22,217	4,956	87,388
Mexico	209,958	41,267	56,735	14,933	89,527	682,927	1,642		3,564	209	60	154,012	560
Guatemala 2/	12,705	112	19	96	11,694			5	2,346	11,231	4		9,228
El Salvador 2/	95,499	325	19	65	7,841	11,493		859	31,160	3,316		6,911	15,356
Costa Rica 2/	20	754		12,080	7,179	11,108		3,844	21,095	3,594		19,184	1,586
Jamaica 2/		2,438	12	4		723			1,598			10,600	30
Dominican Republic 2/	83,777	705	41	45	22,977	18	80	10,880	21,743	5,462	90	26,725	10,584
Trinidad & Tobego			12,337	26				672	168		4		76
North America, other 4/	6,962	437	184	396	16,714	233	93	1,563	9,349	7,988	11	2,825	14,061
Venezuela	124		27	1	12,291			4,954	5		273	220	108
Ecuador 2/		125		11		19,430		12	112		29		544
Chile 2/ 3/	31				330			85,689	14,054		34	886	1
Brazil	257,261		23,302	3	66,064	734,977	4,396	420,222	465,434	34,176	183,041	516,920	20,321
Uruguay 2/ 3/	187				10,134				38,476		32		1,180
Argentina	157	304			3,331	4,625		481	12,145	1,648		2,199	
South America, other 4/	4,211	271	250	49	13,942	9,497		6,559	2,257	16,783	2,746	8,477	510
Sweden				11	11	87,472				5,505	36	9,920	
Norway				5		81,724							2
Oenmark								13,272			3	8,835	5
United Kingdom	104		32,439	30,631		191,442		6,886	31,534	11,034	6,002		1,000
Netherlands			19			824,354		5,512	1,260		27,288		54
Belgium & Luxembourg			16,286	382		728,315		24,715	76,092	397		4,998	19,966
France	156				5,534	799,190		124,418	226,863	3			573
West Germany	21			373		657,777		108,298			26	5,713	3,968
East Germany								10,202					
Austria						64,668		220					1,607
Hungary								151,306					
Poland						494,655							
Spain			6,963	10		40,422			22,206		25		23
Portugal									15,831				2
Italy	9,718			8,255		182,512		39,197	538,463		21	79	29
Yugoslavia								10,954					
Romania						203,569							
Turkey			29,283								8,848		
Europe, other				36					5,787				167
Iran				32		401,792		817	54,138			122	19
Afghanistan 2/ 3/									14,042				
India					166,704	269,807			288,802	21,706	53,829		
Pakistan 2/ 3/									183,674				
Bangladesh 2/ 3/					45,859			110,904			5,476		
Ceylon 2/ 3/					28,808								2
Thailand 2/		9,926			22,610				22,678	137,531			12,400
Malaysia				40	11,493				6,836		5		1
Indonesia 2/			28		61			17,147					9
Philippines 2/	40	99		66	4	85,705					5	28,613	280
Korea, Republic of		73		72	193	773,417			2,738		133	3,300	
Hong Kong			22	150	11,574						3		8
China, Taiwan	28,841	11	99	88	202	26,849	147		16,916		153	75,484	10
Japan		7		768		1,421,963	5,580	9,804	64,147	1,405	52	82,633	260
Asia, other		39	70	323	42			2,756			47	77	1,295
Australia			9	91					404		63	20,631	222
New Zealand	6,826	152			1,679				17,037	5,864	41	193,456	3,263
Oceanic, other													131
Libya			2	1					22,593				1
Ethiopia 2/									49,754				
Kenya 2/ 3/	44			10	3,251				11,012	11,017			
Africa, other 4/	5,735	606		1,123	370				6,503		72	58	11,345
Total	751,956	61,471	254,554	71,389	580,524	11,747,642	22,104	1,224,976	2,414,505	306,580	310,669'	1,187,834	218,175
Countries with AIO programs 2/	203,778	14,487	199	13,749	183,391	137,389	173	233,721	420,154	196,365	8,424	102,894	59,166
Percent to AID countries	27	24	1	19	32	1	1	19	17	64	3	9	27
Countries where AIO financed at least part of fertilizers 3/	3,686	0	9	59	88,414	0	93	196,593	261,263	11,037	5,542	965	15,159

1/ Other exports: 959 tons sodium nitrate; 689 tons natural crude potash salts; 22,259 tons nitrogenous chemical fertilizer; 280 tons basic slag; 332,518 tons potassium chemical fertilizers, nec; and 44,951 tons organic material.
2/ Countries with active AIO agricultural programs.
3/ Countries which received AIO financed fertilizer, but not necessarily all that was exported to each country.
4/ Includes AID and non-AIO countries.

Table 8.--U.S. exports of selected fertilizer materials, fertilizer years 1971-72 through 1975-76

Material	1971-72	1972-73	1973-74	1974-75	1975-76
	Short tons of material				
Anhydrous ammonia					
Fertilizer, grade	420,865	693,857	532,067	276,840	254,554
Industrial		186,077	112,839	83,974	71,389
Ammonium nitrate	33,742	21,425	36,964	22,349	61,471
Ammonium sulfate	557,562	485,950	557,474	571,637	751,956
Sodium nitrate	982	1,233	566	3,799	959
Urea	464,462	522,976	322,524	449,982	580,524
Synthetic nitrogenous materials n.e.c.	98,124	30,381	29,177	22,412	22,259
Phosphate rock	13,580,470	13,587,848	14,051,471	13,393,246	11,747,642
Normal superphosphate	13,637	46,712	25,114	21,023	22,104
Concentrated superphosphate	723,901	865,318	957,052	1,107,419	1,224,976
Ammonium phosphate	1,541,521	2,060,341	2,154,127	2,241,758	2,721,085
Potassium chloride	858,869	1,247,457	1,263,993	1,014,968	1,187,834
Potassium sulfate	211,366	240,306	272,345	350,144	332,518
Mixed fertilizers	243,022	372,692	437,247	496,896	218,175

Table 9.--U.S. imports and exports of primary plant nutrients, 1951-52 through 1976-77

1,000 short tons

Fertilizer	N		P_2O_5		K_2O	
	Imports	Exports	Imports	Exports	Imports	Exports
1951-52	290	73	39	94	264	63
1952-53	429	44	41	74	159	54
1953-54	421	62	62	88	121	54
1954-55	373	141	61	154	139	91
1955-56	330	255	56	153	170	180
1956-57	294	268	54	256	179	315
1957-58	305	227	59	246	213	252
1958-59	294	223	64	204	238	310
1959-60	298	188	82	177	282	418
1960-61	276	213	67	238	285	484
1961-62	337	234	87	283	282	503
1962-63	344	196	117	275	486	411
1963-64	453	264	100	400	691	526
1964-65	470	392	98	432	884	625
1965-66	529	546	125	441	1,332	664
1966-67	669	749	165	787	1,643	678
1967-68	675	1,045	169	1,145	2,225	714
1968-69	690	1,594	183	995	1,944	798
1969-70	855	1,328	273	845	2,646	681
1970-71	929	1,077	283	898	2,510	620
1971-72	843	1,032	326	1,102	3,088	657
1972-73	882	1,508	312	1,422	3,192	922
1973-74	1,068	1,269	315	1,581	4,114	947
1974-75	1,198	1,115	274	1,861	3,847	848
1975-76	1,218	1,240	221	2,176	3,910	911
1976-77 *	1,427	1,219	224	2,345	4,295	1,114

* Estimated.

Import Balance

Export Balance

The United States had an export balance of K_2O from 1955-56 through 1961-62. Production from the then newly developed Canadian deposits shifted the net balance to imports in 1962-63. Since 1969-70, domestic production of potassium chloride (KCl) has been smaller than imports of KCl from Canada.

For the three primary fertilizer nutrients combined, the United States imported 5,349,000 tons and exported 4,327,000 tons in 1975-76. The United States is expected to import 5,946,000 tons and export 4,678,000 tons of these nutrients in 1976-77.

THE WORLD FERTILIZER MARKET

World food shortages have intensified the interest in fertilizer as a means of increasing crop yields and thereby increasing total food production. Fertilizer is an important means for increasing needed food production in developing as well as developed countries.

World production of primary plant nutrients totaled about 92 million metric tons 1/ in 1974-75 (latest year for which world fertilizer data are available), an increase of about 5 percent over 1973-74 and about 44 percent over 5 years ago (tables 10, 11, and 12). Consumption totaled over 82 million tons in 1974-75, a 2 percent decrease over 1973-74 and an 8 percent increase over 5 years ago.

The United States ranked number one in total use of each of the primary plant nutrients and the production of N and P_2O_5 in 1974-75. It produced 18 percent of the world's plant nutrients and used 19 percent of them in 1974-75.

Nitrogen (N) - In 1974-75, the United States produced 20 percent of the world's supply of N for fertilizer, consumed 20 percent, and ranked number one as an importer and number two as an exporter (table 10). Japan ranks number one as an exporter. The United States and India rank number one and two, respectively, as importers. China's imports have dropped the past 4 years and it now ranks number three.

Indonesia, the only AID participant in the top 10, ranked number four as an importer. Half of the top 10 importers were developing countries. Japan, the Netherlands, Belgium, and Norway each exported more N than was used at home.

1/ Multiply metric tons by 1.1023 to convert to short tons.

Table 10.--Nitrogen: N production, consumption, and foreign trade by leading countries, 1974-75

Country	Production		Imports		Exports		Consumption	
	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank
United States	8,621,000	1	1,085,000	1	1,015,000	2	7,795,623	1
USSR	7,856,000	2			470,000 1/	5	6,746,000	2
China	3,090,000 2/	3	844,800 2/	3	2,700 2/		3,922,000 2/	3
Japan	2,340,900 1/	4	22,500 1/		1,410,400	1	690,800	10
France	1,694,100	5	257,000 1/	7	278,000 1/		1,554,800	5
West Germany	1,574,089	6	179,039 1/		402,522	8	1,200,939	6
Poland	1,457,470	7	1,441		384,167	9	1,146,409	7
Netherlands	1,289,000 1/	8	32,000 1/		807,000 1/	3	432,000 1/	
India	1,186,600	9	884,751	2			1,733,800	4
Italy	1,131,693	10	25,199		468,012	6	672,195	
Romania	980,000				430,000 1/	7	490,000	
United Kingdom	884,600		119,400		118,600		918,400	8
Spain	818,963		11,806		16,861		713,755	9
Belgium	639,386		100,894		472,769	4	174,800 1/	
East Germany	435,958		194,400	10	2,000 1/		671,300	
Norway	390,200		900 1/		288,400	10	96,200	
Mexico	388,548		252,820	8	2,300		659,395	
Brazil	150,200		238,900	9	301		389,183	
Egypt	100,200 1/		263,500 1/	6			360,000 1/	
Indonesia	131,000 1/		581,000 1/	4			401,800	
Denmark	83,100 1/		268,300 1/	5	2,000 1/		300,000	
Total, other	6,997,578		2,821,085		1,518,162		7,790,013	
World Total	42,240,585		8,184,735		8,089,194		38,859,412	

1/ Unofficial figures.
2/ FAO estimate.

Source: Annual Fertilizer Review 1975, Food and Agriculture Organization of The United Nations.

Table 11.--Phosphate: P_2O_5 production, consumption, and foreign trade by leading countries, 1974-75

Country	Production		Imports		Exports		Consumption	
	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank
United States	6,049,000	1	249,000	5	1,707,000	1	4,076,930	1
USSR	3,868,000	2	45,500	-	102,400 1/	9	3,226,000	2
France	1,720,400	3	462,700 1/	1	264,500 1/	3	1,688,200	3
China	1,302,700 2/	4	25,500 2/	-	-------	-	1,318,700 2/	4
West Germany	900,446	5	155,127	7	131,975	7	876,941	6
Poland	823,231	6	45,000 1/	-	45,200 1/	-	888,203	5
Japan	769,400	7	45,900	-	24,600	-	692,400	8
Canada	734,000	8	39,000	-	175,000	6	482,000	-
Austria	727,980	9	-------	-	4,000	-	630,000 1/	9
Spain	655,000	10	2,491	-	51,564	-	535,136	10
Belgium	602,744 1/	-	54,945	10	482,182	2	129,700 1/	-
Brazil	387,300	-	436,000 1/	2	1,650	-	807,378	7
India	331,200	-	279,930	4	-------	-	477,600	-
East Germany	410,164	-	67,400	9	-------	-	453,100	-
Yugoslavia	252,459	-	9,435	-	93,949	10	167,000	-
Netherlands	296,200 1/	-	22,700 1/	-	221,900 1/	4	90,800 1/	-
Indonesia	-------	-	348,000 1/	3	-------	-	110,100	-
Hungary	198,509	-	189,000 1/	6	-------	-	361,721	-
South Korea	166,194	-	91,928	8	-------	-	245,554	-
Tunisia	184,828	-	-------	-	179,545	5	21,800 1/	-
Lebanon	127,600	-	-------	-	110,000 1/	8	20,000	-
Total, other	5,170,179	-	1,404,851	-	779,389	-	5,484,691	-
World Total	25,677,534		3,974,407		4,374,854		22,783,954	

1/ Unofficial figures.
2/ FAO estimate.

Source: Annual Fertilizer Review 1975, Food and Agriculture Organization of The United Nations.

Table 12.--Potash: K_2O production, consumption, and foreign trade by leading countries, 1974-75

Country	Production		Imports		Exports		Consumption	
	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank
USSR	6,586,000	1	-------	-	2,329,600	2	3,708,000	2
Canada	5,662,700	2	-------	-	4,971,300 1/	1	230,000 1/	-
East Germany	2,864,000	3	-------	-	2,089,000	3	715,900	7
West Germany	2,658,896	4	-------	-	1,209,969	4	1,170,459	5
United States	2,090,000	5	3,493,000	1	770,000	6	4,004,984	1
France	2,078,500	6	337,000 1/		884,100 1/	5	1,390,300	4
Israel	653,920	7	-------	-	582,035	7	15,080	-
Spain	380,635	8	-------	-	86,137	8	266,440	-
China	300,000 2/	9	246,300 2/	-	-------	-	556,300 2/	9
Congo	285,060	10	-------	-	-------	-	4,000 1/	-
Italy	165,616	-	201,200	-	53,211	9	231,405	-
Poland	-------	-	1,453,276	2	-------	-	1,443,624	3
Japan	-------	-	810,600	3	-------	-	721,800	6
Czechoslovakia	-------	-	603,000	4	-------	-	675,000	8
Brazil	-------	-	521,302	5	-------	-	521,302	10
United Kingdom	12,000 1/	-	486,900	6	-------	-	474,400 1/	-
India	-------	-	443,044	7	-------	-	339,200	-
Hungary	-------	-	440,000 1/	8	-------	-	423,219	-
Belgium	-------	-	308,866	9	-------	-	171,200 1/	-
Netherlands	-------	-	244,400	10	-------	-	110,400 1/	-
Chile	13,516	-	201,200	-	9,100	10	15,091	-
Total, other	-------	-	3,257,079	-	-------	-	2,748,969	-
World Total	23,750,843		13,047,167		12,984,452		19,937,073	

1/ Unofficial figures.
2/ FAO estimate.

Source: Annual Fertilizer Review 1975, Food and Agriculture Organization of The United Nations.

Phosphate (P_2O_5) - The United States continued as the leading producer, consumer, and exporter of P_2O_5 (excluding phosphate rock) (table 11). It produced 24 percent, exported 39 percent, and consumed 18 percent of the world's fertilizer P_2O_5. Four of the top 10 importers are developing countries. Belgium, the Netherlands, Tunisia, and Lebanon each exported more P_2O_5 than was used at home.

Potash (K_2O) - The United States ranked fifth as a producer, sixth as an exporter, but first as an importer and consumer of K_2O in 1974-75 (table 12). The U.S.S.R. continued as the leading producer and ranks second as a consumer and as an exporter.

Eleven countries are currently the world's significant sources of K_2O for fertilizers. Of the 11, 70 percent of Canada's total export of KCl went to the United States. Israel exports about 89 percent, while East Germany exports about 73 percent of its production. West Germany and France export about half, while Spain, the United States, and the U.S.S.R. each export about a third of their production.

Of the major producers, Canada, East Germany, West Germany, and Israel exported more K_2O than was used at home. Poland, Japan, Czechoslovakia, Brazil, United Kingdom, India, Hungary, Belgium, and the Netherlands, in order, are the top 10 importers after the United States. The first four of these are among the top 10 users of K_2O.

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